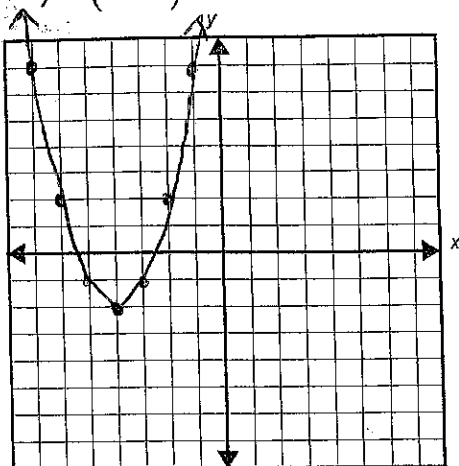


Name: Key

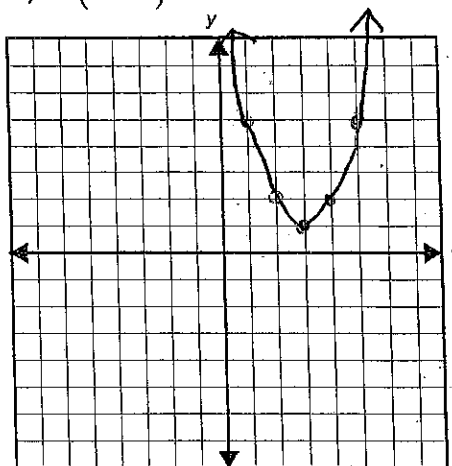
Date: _____ Pd: _____

Graph each quadratic equation on the grid provided.

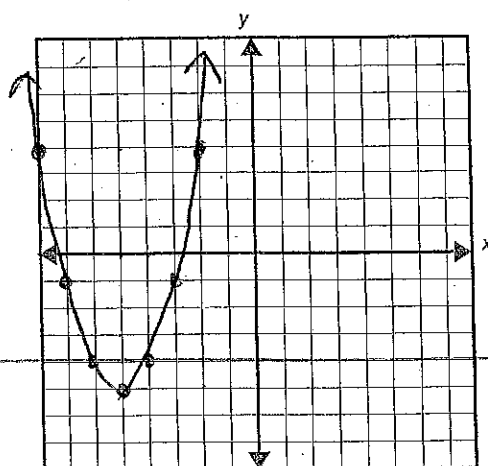
1) $y = (x+4)^2 - 2$



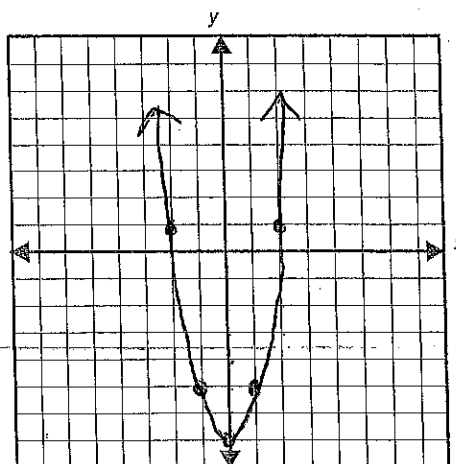
2) $y = (x-3)^2 + 1$



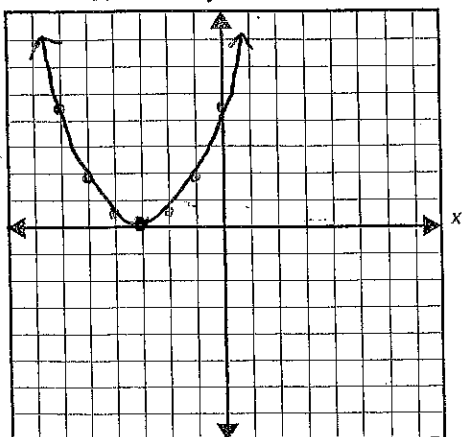
3) $y = (x+5)^2 - 5$



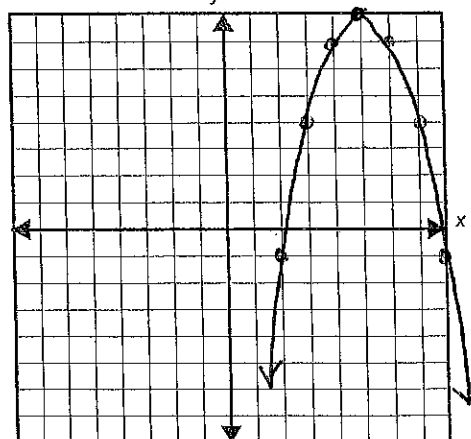
4) $y = 2x^2 - 7$



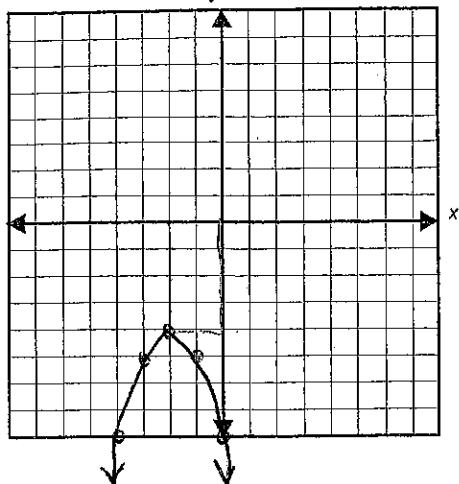
5) $y = \frac{1}{2}(x+3)^2$



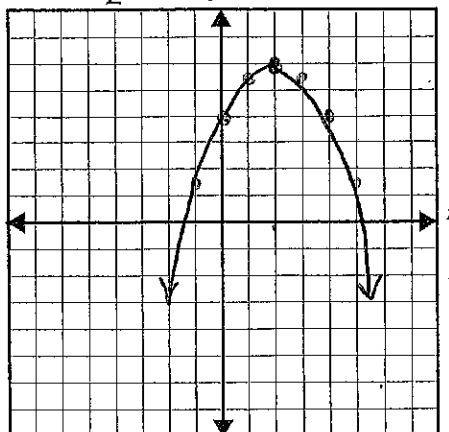
6) $y = -(x-5)^2 + 8$



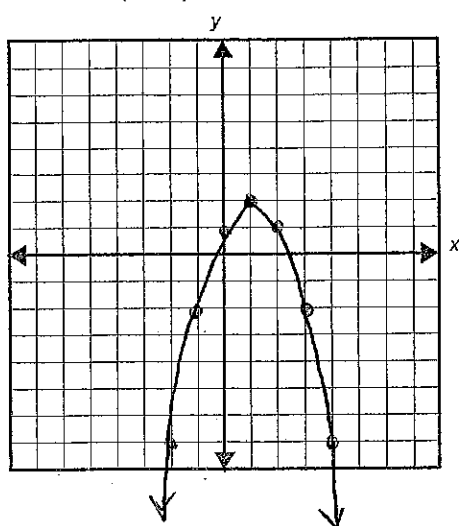
7) $y = -(x+2)^2 - 4$



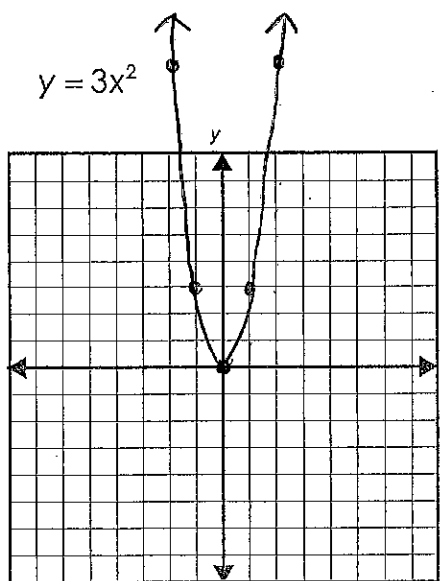
8) $y = -\frac{1}{2}(x-2)^2 + 6$



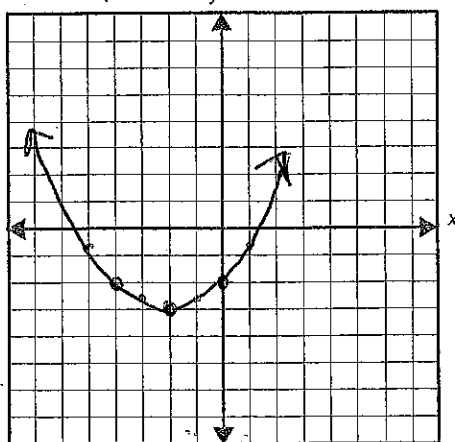
9) $y = -(x-1)^2 + 2$



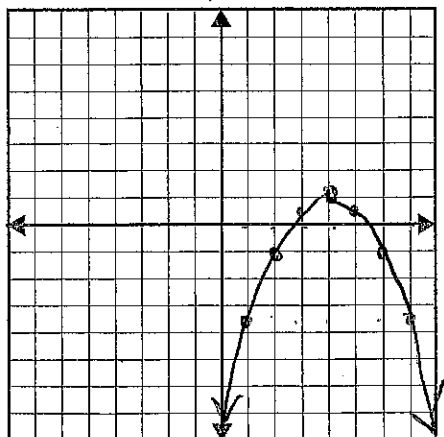
10) $y = 3x^2$



11) $y = \frac{1}{4}(x+2)^2 - 3$



12) $y = -\frac{1}{2}(x-4)^2 + 1$



Convert each of the following to vertex form.

13) $y = x^2 - 6x + 10$ $a=1$ $b=-6$ $c=10$

$$\frac{-b}{2a} = \frac{6}{2(1)} = 3 \quad (3, 1)$$

$$\begin{aligned} (3)^2 - 6(3) + 10 & \quad a=1 \\ 9 - 18 + 10 & \\ -9 + 10 = 1 & \end{aligned}$$

Vertex form: $y = (x-3)^2 + 1$

14) $y = -x^2 + 4x + 6$

$$\frac{-b}{2a} = \frac{-4}{2(-1)} = 2 \quad (2, 10)$$

$$\begin{aligned} -(2)^2 + 4(2) + 6 & \quad a=-1 \\ -4 + 8 + 6 & \\ 4 + 6 = 10 & \end{aligned}$$

Vertex Form: $y = -(x-2)^2 + 10$

15) $y = 3x^2 - 24x + 50$

$$\frac{-b}{2a} = \frac{24}{2(3)} = 4 \quad (4, 2)$$

$$\begin{aligned} 3(4)^2 - 24(4) + 50 & \quad a=3 \\ 48 - 96 + 50 = 2 & \end{aligned}$$

Vertex form: $y = 3(x-4)^2 + 2$

16) $y = -2x^2 + 2x + 1$

$$\frac{-b}{2a} = \frac{-2}{2(-2)} = \frac{1}{2} \quad \left(\frac{1}{2}, \frac{3}{2}\right)$$

$$\begin{aligned} -2\left(\frac{1}{2}\right)^2 + 2\left(\frac{1}{2}\right) + 1 & \quad a=-2 \\ -2\left(\frac{1}{4}\right) + 1 + 1 & \\ -\frac{1}{2} + 1 + 1 = 1.5 & \end{aligned}$$

Vertex Form: $y = -2\left(x - \frac{1}{2}\right)^2 + \frac{3}{2}$

17) $y = x^2 - 4x + 1$

$$\frac{-b}{2a} = \frac{4}{2(1)} = \frac{4}{2} = 2 \quad (2, -3)$$

$$\begin{aligned} 2^2 - 4(2) + 1 & \quad a=1 \\ 4 - 8 + 1 & \\ -4 + 1 = -3 & \end{aligned}$$

Vertex form: $y = (x-2)^2 - 3$

18) $y = 2x^2 + 3x - 5$

$$\frac{-b}{2a} = \frac{-3}{2(2)} = -\frac{3}{4}$$

$$\begin{aligned} 2\left(-\frac{3}{4}\right)^2 + 3\left(-\frac{3}{4}\right) - 5 & = -6.125 \\ & = -\frac{49}{8} \end{aligned}$$

Vertex Form: $y = 2\left(x + \frac{3}{4}\right)^2 - \frac{49}{8}$

Write the equation of the quadratic function given the following information.

19) vertex of $(3, 6)$ and a y-intercept of $(0, 2)$

$$2 = a(0-3)^2 + 6 \quad (3, 6)$$

$$2 = a(-3)^2 + 6$$

$$2 = 9a + 6$$

$$-4 = 9a$$

$$a = -\frac{4}{9}$$

$$y = -\frac{4}{9}(x-3)^2 + 6$$

20) vertex of $(0, 5)$ and contains the point $(1, -2)$

$$-2 = a(1-0)^2 + 5 \quad (0, 5)$$

$$-2 = a(1)^2 + 5$$

$$-2 = a + 5$$

$$-7 = a$$

$$a = -7$$

$$y = -7(x-0)^2 + 5$$

$$y = -7x^2 + 5$$

21) vertex of $(-1, -4)$ and a y-intercept of $(0, 3)$

$$3 = a(0+1)^2 - 4$$

$$3 = a(1)^2 - 4$$

$$3 = a - 4$$

$$7 = a$$

$$(-1, -4)$$

$$a = 7$$

$$y = 7(x+1)^2 - 4$$

22) vertex of $(2, 3)$ and contains the point $(6, 9)$

$$9 = a(6-2)^2 + 3$$

$$9 = a(4)^2 + 3$$

$$9 = 16a + 3$$

$$6 = 16a$$

$$\frac{6}{16} = a$$

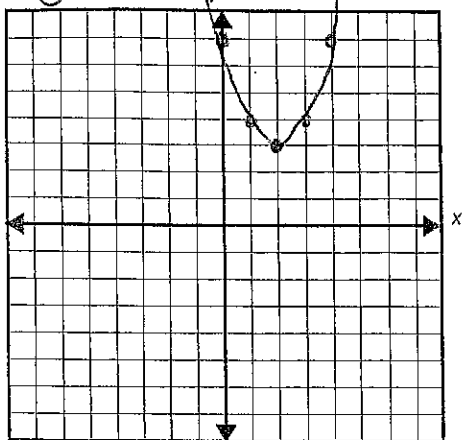
$$(2, 3)$$

$$a = \frac{3}{8}$$

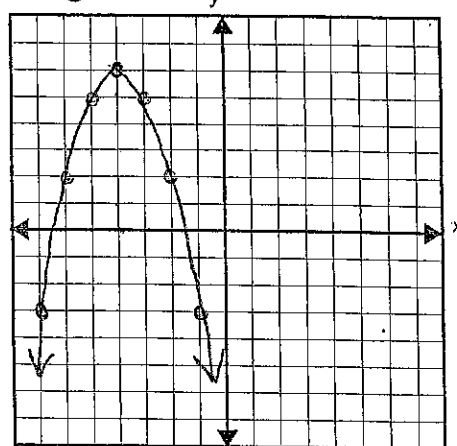
$$y = \frac{3}{8}(x-2)^2 + 3$$

Write the equation of the quadratic function given the graph.

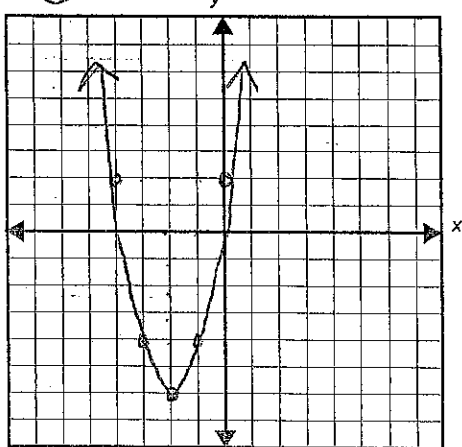
23) $y = (x-2)^2 + 3$



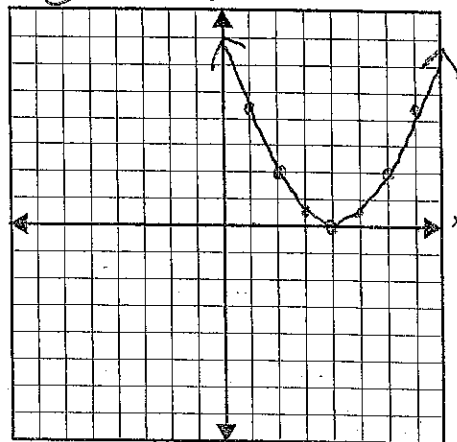
24) $y = -(x+4)^2 + 6$



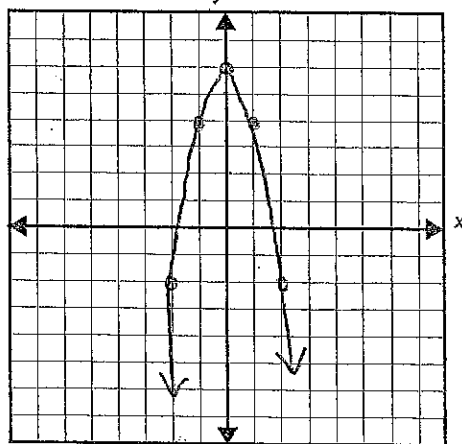
25) $y = 2(x+2)^2 - 6$



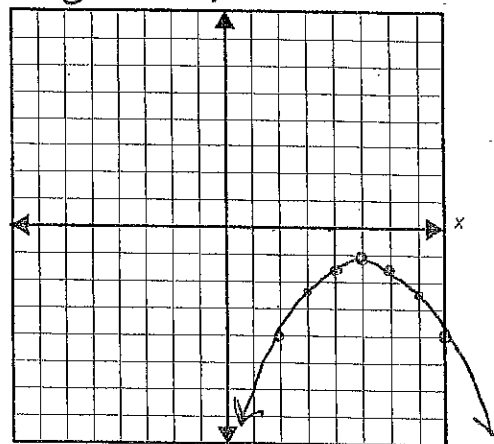
26) $y = \frac{1}{2}(x-4)^2$



27) $y = -2(x)^2 + 6$

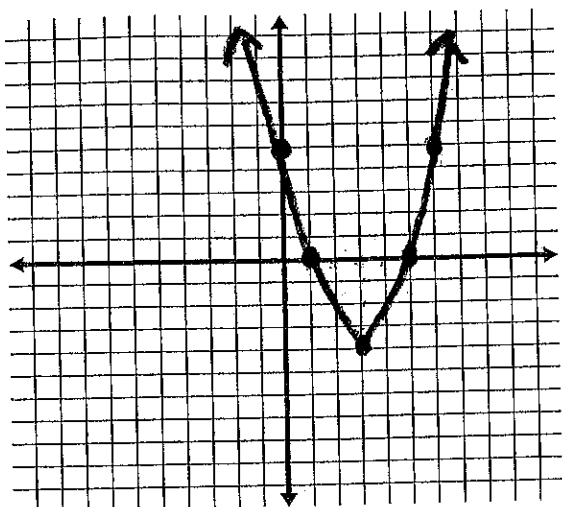


28) $y = -\frac{1}{3}(x-5)^2 - 1$



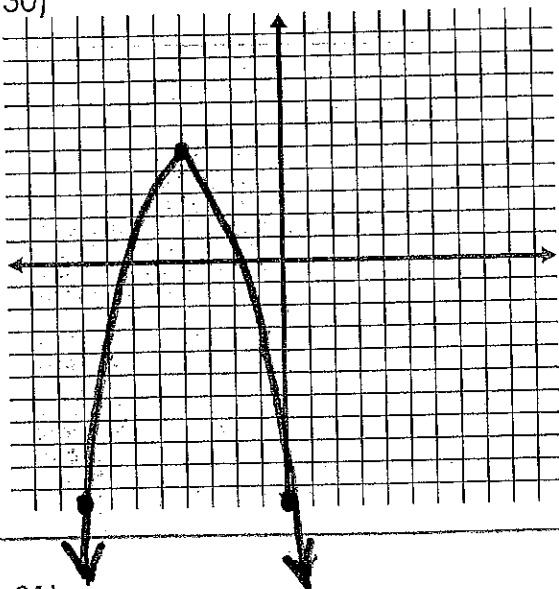
Answer the following questions based on the given graph.

29)



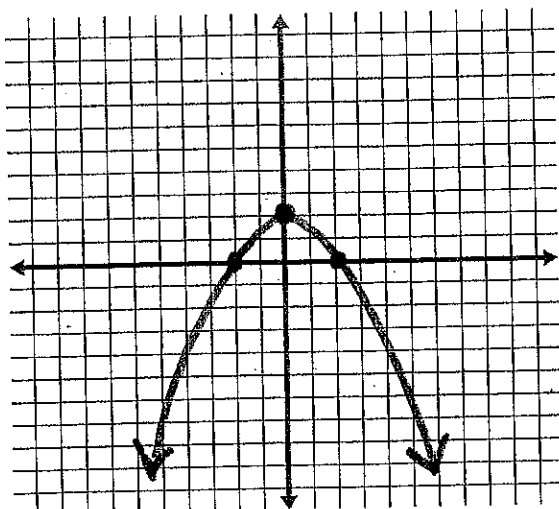
Domain $(-\infty, \infty)$
 Range $[-4, \infty)$
 Max/Min $\min (3, -4)$
 Increasing $(3, \infty)$
 Decreasing $(-\infty, 3)$
 x-intercept $(1, 0) (5, 0)$
 y-intercept $(0, 5)$

30)



Domain $(-\infty, \infty)$
 Range $(-\infty, 5)$
 Max/Min $\max (-4, 5)$
 Increasing $(-\infty, -4)$
 Decreasing $(-4, \infty)$
 x-intercept $(-1.75, 0) (-6.25, 0)$
 y-intercept $(0, -10)$

31)



Domain $(-\infty, \infty)$
 Range $(-\infty, 2]$
 Max/Min $\max (0, 2)$
 Increasing $(-\infty, 0)$
 Decreasing $(0, \infty)$
 x-intercept $(-2, 0) (2, 0)$
 y-intercept $(0, 2)$